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AUTHOR Johnson, Gary R.
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ABSTRACT

Two basic concepts of the social sciences--society and culture--are analyzed and new definitions are proposed. Concepts are the basic building blocks of scientific theory. A science with poor concepts will, therefore, be incapable of producing powerful scientific theory. When commonly used social science definitions of society and culture are evaluated according to standard rules for the formulation of definitions, they are found to be fundamentally unsound as scientific definitions. Because the very foundations of the discipline have been poorly constructed, the social sciences have failed to develop elegant scientific theories. The old concepts must be replaced with a set of firmer concepts. Working from a base definition of system, definitions for society and culture are reformulated. Related concepts are also redefined. The new definitions are proposed as foundations for an alternative social science paradigm. (Author/RM)

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SOCIETY AND CULTURE: SYSTEMS DEFINITIONS FOR AN ALTERNATIVE SOCIAL SCIENCE PARADIGM

Gary R. Johnson

Lake Superior State College

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Abstract

SOCIETY AND CULTURE: SYSTEMS DEFINITIONS
FOR AN ALTERNATIVE SOCIAL SCIENCE PARADIGM

Concepts are the basic building blocks of scientific theory. A science with poor concepts will therefore be incapable of producing powerful scientific theory. The two most basic concepts of the social sciences are probably society and culture. Common social science definitions of these two concepts are evaluated according to standard rules for formulating definitions. They are found to be fundamentally unsound as scientific definitions. Working from a base definition of system, definitions for these two basic concepts are reformulated. The new definitions are proposed as foundations for an alternative social science paradigm.

Seeing then that truth consisteth in the right ordering of names in our affirmations, a man that seeketh precise truth had need to remember what every name he uses stands for, and to place it accordingly, or else he will find himself entangled in words, as a bird in lime twigs, the more he struggles the more belimed. And therefore in geometry, which is the only science that it hath pleased God hitherto to bestow on mankind, men begin at settling the significations of their words; which settling of significations they call definitions, and place them in the beginning of their reckoning.

By this it appears how necessary it is for any man that aspires to true knowledge, to examine the definitions of former authors; and either to correct them, where they are negligently set down, or to make them himself. For the errors of definitions multiply themselves according as the reckoning proceeds, and lead men into absurdities, which at last they see, but cannot avoid, without reckoning anew from the beginning, in which lies the foundation of their errors.

Thomas Hobbes, Leviathan (1962:36-37)

The elementary components of all scientific theories are concepts. These concepts partition the reality of concern to a science, and are combined to form generalizations. The most basic of these generalizations are axioms. A set of axioms and lower level generalizations form a scientific theory. A theory is the device through which a science explains some portion of reality.

Concepts are thus the foundation of any science. Yet it is a commonplace today for scientists to observe that the definitions which create concepts are neither true nor false. Definitions are merely statements of terminological equivalence which indicate how a term will be used. Nevertheless, there is still a need for shared definitions among social scientists. No discipline could develop theoretically if its practitioners each employed his or her own idiosyncratic definitions. Thus, few (if any) social scientists today would argue against the desirability of shared definitions.

If the establishment of useful scientific concepts required only that definitions be shared, professional social science associations could establish by fiat the professionally accepted definitions of key concepts. Unfortunately, it is not that simple. Scientific definitions may never be true or false, but they are nevertheless not entirely arbitrary--they are more or less useful (as it is commonly put). The greater utility of some concepts over others is a function of relative capacity to be used in significant generalizations about the subject matter (Kaplan 1964:50-51; Bergmann 1957:50; Hempel 1952:18, 46-47). Some concepts do a better job

than their alternatives of "carving at the joints" (see Kaplan 1964:50), i.e., of cutting up reality in such a way that the pieces derived from this analytical process can be related in successful scientific generalizations. An astronomy which attempted to explain the movement of "luminoes," without distinguishing stars, planets, moons, and asteroids, would not be "carving at the joints," and would not be particularly successful as a science. Likewise, while it appeared reasonable at one time to classify whales and porpoises as fish because they live in water, contemporary biology carves at the joints better by classifying these animals as mammals (Cohen and Nagel 1934:223-224).

Every successful science must thus have concepts which partition its reality in a way that makes that reality amenable to the development of scientific generalizations. Since a theory is composed of generalizations, there is an intimate relationship between a science's concepts and its theories. A set of related concepts actually contains an implicit or rudimentary theory of the phenomena to which the concepts refer (Kaplan 1964:52-54; Hempel 1952:1-2). Theoretical development in a science, then, is dependent upon good concepts. As one political scientist has noted, "Nothing holds up the development of a newly developing science so much as an outmoded, inapplicable, and ambiguous set of concepts" (Isaak 1981: 74).

The social sciences can certainly be viewed collectively as a "newly developing science." Judging from its practitioners own views, however, the social sciences are relatively impoverished as scientific disciplines. Self-consciousness about this impoverished state is probably the reason that social scientists frequently make invidious

comparisons between their own set of disciplines and those of the "natural" or "physical" sciences. Some who make such comparisons go on to bemoan what they consider a dearth of good data and relatively impotent analytical techniques. They assume that with more data, or at least better data, and with more powerful techniques of data analysis, that the social sciences would soon become what they think of as "mature" sciences. However, it may be that the explanatory weakness of current social scientific theory has little to do with the quantity and quality of available data and the power of our techniques of data analysis. It may be that the current state of the social sciences is attributable in large measure to an underlying conceptual and theoretical chaos. If this is true, the cure for the scientific powerlessness of the social sciences would lie in conceptual-theoretical reformulation and unification. The theoretical foundations of such a reformulated conceptual-theoretical framework (or, perhaps, "paradigm") would be a set of axioms that constituted the most fundamental laws of the social sciences. As pointed out in the first paragraph above, these axioms or laws would themselves be framed in terms of the social sciences' most fundamental concepts. Thus, work toward a new paradigm for the social sciences would have to begin with an analysis and possible reformulation of the most fundamental concepts of the social sciences.

This paper is an attempt to provide such an analysis and reformulation of two fundamental social scientific concepts. As Thomas Kuhn pointed out in his classic study of scientific revolutions, effective research in a science depends upon a clear understanding of the entities a science studies and the way those entities interact with each other

(1970:4-5). There might be some disagreement among social scientists about the entities that are the object of social scientific study, but surely high on the lists of most social scientists would be "society" and "culture." Sociologists, after all, frequently define sociology as the "science of society," and anthropologists have sometimes defined a major branch of their broad discipline as the "science of culture" (e.g., White 1969). Some have explicitly identified "society" and "culture" as two basic concepts of both sociology and anthropology (e.g., Hoult, 1969:306).

This paper shows that these two fundamental concepts, society and culture, have typically been poorly defined in the social sciences. It goes on to reformulate these concepts on a firmer foundation. The two reformulated concepts, together with their cognates, are proposed as building blocks for an alternative social science paradigm. Before turning to an analysis of current definitions, however, we will first look briefly at how one might go about evaluating scientific definitions.

EVALUATING SCIENTIFIC DEFINITIONS

If good concepts are the foundation of a successful scientific theory, how do we go about constructing good concepts? Unfortunately, the answer to this question involves a paradox--what Abraham Kaplan has called "the paradox of conceptualization": "The proper concepts are needed to formulate a good theory, but we need a good theory to arrive at the proper concepts" (1964:53). Since we may thus confirm the value of a scientific concept only through its role in a successful scientific theory, concepts can receive definitive evaluation only retroactively.

If a theory is scientifically successful (i.e., of great explanatory value), the concepts contained in the theory receive support as good scientific concepts. However, if a discipline's theories are scientifically weak, the value of the concepts employed in those theories is open to queston. While some social scientists might react defensively, most would no doubt readily admit that the social sciences have not been notably successful in building theories of high explanatory value. If poor concepts are among the sources of this failure, what criteria could be used in evaluating current concepts, without the hindsight resulting from successful theory? One approach would be to employ standard criteria for evaluating any definition--criteria one could find discussed in almost any introductory logic text.

The most widely accepted rule for formulating definitions is that the concept created by a definition should be neither ambiguous nor vague. A concept is ambiguous if it has more than one meaning, or put another way, if the same term refers to two or more different kinds of phenomena. A concept is vague if it is not sharply or precisely defined, so that it is difficult to determine what is included in the class and what is not (the reader may wish to consult Robinson 1954:66-70; Graham 1971:40-42; or almost any logic text).

There are several important and related consequences of using ambiguous and/or vague concepts in science. First, effective communication among scientists will be frustrated when ambiguous or vague concepts are in use, resulting in scientists frequently talking past each other. Rather than an error-correcting enterprise made possible by its collective nature, scientific discourse becomes a cacophony. Second, it is

difficult or impossible to test propositions definitively if they are formulated in terms of ambiguous or vague concepts. As a result the most important propositions of a science will go untested, or be tested with conflicting results, while perhaps the majority of effort goes to testing largely trivial propositions that are framed in terms of precise and unambiguous, but unimportant, concepts. Third, if concepts are ambiguous or vague, it will be difficult or impossible to build the deductive structure that is a scientific theory. As Robinson puts it:

> Science requires universal agreement not merely on the applications of terms to events experienced, but also on the inferences that can be drawn from those terms when they are combined in propositions. Safe and agreed inferences are possible only with precise and unambiguous terms (1954:70).

Since deduction requires precision of meaning, attempts to theorize with ambiguous or vague concepts will create a theoretical muddle. Scientists under these circumstances will be like Hobbes's birds in lime twigs--the more they struggle, the worse they make the muddle.

It is clear, then, that good scientific concepts will be precise and unambiguous. These are the two most important criteria we may use in evaluating current concepts of society and culture. It is also widely accepted, however, that definitions may be too broad or too narrow. A definition is too broad if, under some criterion, it includes cases that should not be included. A definition is too narrow if, again under some criterion, it excludes cases which should not be excluded. The legend about Plato's provisional definition of "man" as a "featherless biped" nicely illustrates the case of a definition that is too broad. Diogenes is said to have demonstrated vividly the fault

of this definition by presenting Plato with a plucked chicken. Of course, the reason that a concept that is too broad or too narrow will fail as a scientific tool is that it fails to "carve at the joints." Thus, we can be relatively certain that a concept is neither too broad nor too narrow only with the hindsight that comes from a successful theory. In the meantime, our criteria for evaluating whether a concept is too broadly or narrowly defined can only be common sense and theoretical intuition.

A CRITIQUE OF CURRENT DEFINITIONS

Given the commonly accepted unflattering view of the state of the social sciences, it is probably fair to estimate that current definitions of society and culture are without great theoretical significance. Social scientists may have definitions which are dear to their intellectual hearts, but we have no widely accepted general laws about society or culture. The absence of such laws is prima facie evidence that there is something wrong with the very roots of social scientific theory. This section will demonstrate that current and widely accepted criteria used in defining society and culture are problematic under the rules established in the previous section for evaluating definitions.

Society. Definitions of society among both sociologists and anthropologists typically include some notion of wholeness, inclusiveness, or comprehensiveness. As we will see later, this is a key to defining society. However, these definitions almost always include one or more other criteria that are used as defining characteristics.

Among the most common of these criteria are self-sufficiency, sexual recruitment, shared culture, and territoriality (see Mayhew 1968:577-578 and Mayhew 1971). Another common criterion is that a society includes members of both sexes and all ages. The remainder of this section is an evaluation of each of these defining criteria.

The criterion of self-sufficiency is very common in definitions of society.[1] In well-known works, for example, Aberle, et al. (1950: 101), Levy (1952:112), Parsons and Shils (1952:26), and Parsons (1966: 9) hold this to be a crucial criterion in the definition of society. Levy has explained the self-sufficiency criterion as follows: "A system of action in operation is in theory self-sufficient only if it is in theory capable of furnishing structures covering all of the functional requisites of the system" (1952:130). Despite Levy's fascinating discussion of self-sufficiency (1952:129-134), this criterion is vague and superfluous. If a system, of any kind, exists at a particular time, it has ipso facto fulfilled the functional requisites for its existence. Levy recognizes this, but goes on to explain that the crucial question is whether or not "these requisites are met by the system concerned" (1952:130). This explanation turns out to be inadequate, however, in light of Levy's subsequent explanation of why a society like the United States should be considered self-sufficient even when international trade is necessary to provide raw materials essential in fulfilling its functional requisites. Levy's explanation is that "the consideration that is significant here is whether or not the social system includes structures necessary to obtain the goods required for its various purposes" (1952:132-133; see also Mayhew 1968:583-584). The problem with this explanation is

that a family also has such structures for obtaining goods from outside sources "required for its various purposes." Indeed, all human systems have structures for obtaining goods from outside sources which are required for their purposes. This definitional criterion, on Levy's explanation, is incapable of distinguishing between societies and families (or other subsystems). The self-sufficiency criterion, therefore, is vague. It does not precisely demarcate those systems that are societies from those that are not. In addition, since it is recognized by those who propose such definitions that no human society is fully self-sufficient, it is reasonable to ask how self-sufficient a system must be to be considered a society. Parsons, perhaps sensing these difficulties, says that a society is a social system with "the greatest self-sufficiency of any type of social system" (1968:461, emphasis added). If the meaning of self-sufficiency itself were clear, this might solve the problem. However, definitions of self-sufficiency are frequently muddled. On one hand, it seems possible from definitions like Levy's to conclude that all existing systems are equally self-sufficient by definition. To the extent that it is intelligible, a definition like that of Parsons may be subject to the same flaw:

> By self-sufficiency . . . I mean the capacity of the system, gained through its internal organization and resources and its access to inputs from its environments, to function autonomously in implementing its normative culture, particularly its values but also its norms and collective goals (1968:461).

Even if, upon analysis, one did not conclude from this definition that all systems are equally self-sufficient, it is not at all clear from this definition which kinds of systems are most self-sufficient. Can one determine from this definition of self-sufficiency whether under

this criterion one's family is a society? Depending upon how we were to operationalize "self-sufficiency," it seems possible that American families might be more self-sufficient than the system we normally refer to as American society.

It seems clear from this analysis that the self-sufficiency criterion has been hopelessly vague. Rather than a useful criterion in defining society, this criterion is misleading and confusing. Its recurrent appearance is probably related to the intuition that a society is more inclusive than other systems. Self-sufficiency is confused with inclusiveness.

Aberle, et al. (1952:127-129) also hold at least partial sexual recruitment to be another essential criterion in the definition of society. Levy, for example, says that this criterion helps distinguish a society from systems like monasteries and clubs, whose members are recruited by means other than sexual reproduction (1952:127). But sexual recruitment, like self-sufficiency, is vague. How many members of a group must be sexually recruited under this criterion for a system to be considered a society? If we have two systems that are identical in every respect except that the first has one member who was sexually recruited and the second has none, is the first a society and the second not? Is a system with a high percentage of sexually recruited members somehow more of a society than a system with a low percentage? Questions like these reveal the vagueness inherent in the sexual recruitment criterion.

In addition to its vagueness, the sexual recruitment criterion is probably also overly restrictive (too narrow). It would exclude

systems we would probably do well to consider societies. Imagine, for example, a small and relatively remote society whose members have been rendered sterile by the permanent and localized introduction of some non-lethal chemical into their environment. Imagine further that the members of this society turn to the abduction of children from neighboring societies in order to satisfy their recruitment requirements. Since the presence of the sterility-rendering agent is permanent, the abducted children will also become sterile. At some point in the future, then, none of the members of this system will have been sexually recruited within the society. Are we to maintain that such a system is not a society? While this is admittedly an unusual case, most social scientists would probably wish to continue calling this system a "society." After all, what kind of system would this be if not a society? The sexual recruitment criterion, therefore, appears too restrictive as a distinguishing criterion in the definition of society. It would exclude not only the society in the present example, but also societies who recruited new members solely through immigration or techniques like cloning.

Another criterion, that a society includes members of both sexes and all ages, is related to the sexual recruitment criterion. As Levy notes, sexual recruitment requires that a society be bisexual (1952:129). Others who insist upon both sexes also insist on all ages as a definitional criterion. For example, two of the available dictionaries of sociological concepts mention this criterion in their definitions of society (Fairchild 1967:300; Hoult 1969:306). Marvin Harris also holds that societies consist of "both sexes and all ages" (1979:47). Human

societies may usually contain members of both sexes and all ages, but there is no good reason to make either of these a definitional criterion. One can easily imagine a past or future society composed exclusively of men or women. For example, imagine in a not-too-distant future of easy interplanetary space travel, a sexually exclusive sect of males or females traveling to an uninhabited distant planet and establishing a new "society." The group might even sever all contact with other planets and achieve complete isolation and self-sufficiency. If the group wished to perpetuate itself, artificial means like cloning would suffice. Such a system would admittedly be unusual by conventional standards, but there seems no good scientific reason for not referring to such a system as a "society." This criterion therefore makes a definition of society which contains it too narrow. This criterion is also, like the others, vague. How many of each sex must there be for a system to be a "society?" If there are 100 million males and one female, does this system constitute a "society" until the one female leaves or dies? Is a society with a 50-50 sex distribution more of a society than a society with a 55-45 sex distribution?

The same points apply to the members-of-all-ages criterion. Recall the earlier example of a society whose members have been rendered sterile by the presence of some chemical agent. Assume that this society is unable to recruit new members in any way. As a result, all members of this society in the future will be older than the number of years since the introduction of the chemical agent. Are we to maintain that this system is no longer a society merely because all members are over (say) twenty years of age? Again, such a society would have a

rather special set of membership characteristics (as well as no long term future), but that does not mean that the system should be excluded definitionally from the designation "society." This criterion is therefore probably too narrow.

The members-of-all-ages criterion is also vague. Are the "ages" of this criterion to be measured by generations, decades, years, months, or days? However measured, how many representatives must there be in each age category? One? Suppose we are examining two small societies (say, hunting-and-gathering societies) that are identical in every regard except that one has, for whatever reason, no five-year-olds. Is one a society and the other not? Since we could continue with questions of this kind, it is clear that definitions employing this criterion are critically vague, not to mention overly restrictive, and therefore suspect as scientific concepts.

Another common criterion used in defining society is territoriality. Societies are often said to "occupy" or "have" a territory. Given that humans, the units of which societies are composed, occupy space, it is unavoidably and trivially true that societies also in some sense occupy space. However, beyond this trivial truth, the territoriality criterion is vague. Societies behave differently toward territory. To the extent that a nomadic hunting-and-gathering group can be said to "have" a territory, they "have" a territory in a different sense than a contemporary, boundary-drawing nation-state. Is a nomadic group less of a society than a sedentary group? In the pure case, would a completely nomadic group, whose members never slept in the same place twice, and whose traveling exhibited no geographical

pattern, not be a society? These questions illustrate both the vagueness and narrowness of this criterion. Perhaps even more importantly in this case, however, it is clearly a mistake to think of societies as territorial units, as units demarcated by geographical boundaries. The members of a society may be heavily concentrated in one geographical region, and may (or may not) engage in special behaviors vis-a-vis that territory (e.g., geographical boundary-drawing). Nevertheless, human societies are not territorial entities, even though some display territorial behavior. At any given time many thousands of members of American society are living outside of the geographical United States, but they surely remain members of American society. Likewise, at any given time there are many members of other societies within the geographical United States. These individuals remain members of their own societies, despite their rather intimate contact with American society. If societies are conceptualized as units with geographical boundaries, this geographical interpenetration is conceptually problematical. Based on these several considerations, using territoriality as a defining criterion of society is clearly a mistake.

Finally, definitions of society not infrequently include some notion that a culture is shared among the membership of the society. Since this criterion can only be evaluated by examining the concept of culture, we may allow the section on culture, to which we now turn, to serve as our analysis.

Culture. By long tradition the term "culture" is associated in social science with human phenomena not capable of explanation solely in terms of human biology. Various terms have been used to distinguish

this class of phenomena. In a classic article, for example, Alfred Kroeber followed Herbert Spencer by referring to this class of phenomena as "superorganic" (1917). Leslie White, among many others, distinguished this class through use of the term "extra-somatic"(1959:231). Elman Service employs the term "suprabiological" (1968:222). Gerald Weiss (1973:1382) uses the terms "nongenetic" and "metabiological," while E. S. Markarian (1977:105-106) refers to the "extrabiological."

As we will see, this distinction so many have made with a variety of terms is critically important for defining culture. However, despite some underlying agreement, actual definitions of culture have been quite diverse. In an exhaustive review of definitions of culture in 1952, Kroeber and Kluckhohn included 164 definitions. A great many additional definitions have been proposed since then (a recent review and analysis is that of Vermeersch 1977). Despite this plethora of definitions, there have nevertheless been several recurrent themes in previous efforts to define culture. In this section we will examine four such themes.

One common theme in definitions of culture is that culture is something (ideas, behaviors, customs, etc.) that is "shared" by the members of a society. Chinoy, for example, says that the "fact" that culture is shared is "of central importance" (1970:81). Loflin and Winogrond maintain that culture consists of beliefs which are shared (1976:723). Langton says that "patterns of thought and behavior" must be shared to be part of a "sociocultural system" (1979:291). The problem with this criterion, as Leslie White pointed out, is vagueness (1959:242-244). How many individuals must share

a behavior or idea for it to be a part of culture? Moreover, looked at with a fine eye, no idea or behavior is identical across individuals. Even if we were to agree on the extent to which a trait must be shared among members of a society to be considered a part of culture, what degree of similarity would we require for the trait to be considered "shared?" These questions illustrate the vagueness of this criterion, and therefore its inadequacy as a scientific tool. In addition, however, this criterion is probably too narrow. Thus, if we resolve the vagueness of this criterion by establishing arbitrary levels of similarity and sharing, what are those elements to be called which fall below the cutoff level for culture? How useful is a concept of culture if the elements included in a particular culture vary from year to year depending upon the percentage of the population which shares a behavior? Just above the cutoff one year, an item would be included in culture; the next year, having fallen a percentage point below the cutoff, the same item would be excluded from culture. It is clear that an arbitrary concept of culture like this would not "carve at the joints." We may therefore reject this criterion on two very solid grounds.

A second common theme in definitions of culture is that culture is something that is learned from previous generations. Those who employ this criterion often identify culture with "social heritage" or "tradition," and use descriptive terms like "passed on" and "socially inherited." Kroeber and Kluckhohn devote an entire section in their list of definitions of culture to definitions which put "emphasis on social heritage or tradition" (1952:48). One problem with this criterion is that it is too narrow: it would exclude from

culture all elements which are dissimilar from past elements. As Marvin Harris has noted:

> If culture consists only of cross-generationally duplicated responses, what is one to call those . . . which are newly arisen in the cauldron of industrial innovation? A concept which emphasizes the ageless traditions lazily yielding to the gentle pressure of change may profitably be applied to the Arunta or the Mohave . . . but it is certainly incongruous in the twentieth century (1964:176).

In addition to its narrowness, this criterion is also vague. Innovations seldom if ever appear ex nihilo; they are typically alterations of something currently existing. Under this criterion, how much must an element change to fail the test of being "passed on?" For how many generations would what was once an innovation have to be passed on before it would become a part of a culture? Like the "sharing" criterion, of which this is merely a cross-generational variety, the socially inherited criterion is both vague and too narrow. Definitions containing this criterion will be poor scientific tools.

A third common theme in definitions of culture--almost a universal one--is that culture is, or includes, human mental phenomena--knowledge, ideas, beliefs, attitudes, standards, norms, values, and the like. In sociology, for example, Talcott Parsons (1968:459; 1973) employs such a mentalistic definition of culture, as do Richard Peterson (1979:137-138) and many others. In political science, the concept of political culture also has a mentalistic referent (Pye 1968, 1973). Among anthropologists, most definitions of culture at least include mental phenomena, and many anthropologists would restrict culture exclusively to mental phenemona. Ward Goodenough, for example, has defended the notion that culture is best defined as something "in the

minds and hearts of men" (1971:19). Goodenough wishes culture to be identified with "a system of standards for behavior," these standards, of course, being mental phenomena (1971:21). Bohannan (1973:365), Loflin and Vinogrond (1976:723), and Ruyle (1973:203) are among the other contemporary anthropologists who have recently opted for mentalistic definitions of culture. Keesing (1974) has provided an extended discussion of, and contribution to, "ideational theories of culture." Definitions of culture among systems theorists also often include mentalistic referents. James G. Miller, for example, defines culture as a "complex set of symbols" which all members of a society learn (1978:749). Alfred Kuhn defines culture as "communicated, learned patterns" (1974:154).

The problem with mentalistic definitions of culture is simple, and has been noted for other mentalistic concepts: ideas, standards, values and so on are unobservable (perhaps the ultimate in vagueness). Despite attempts to deal with this criticism (e.g., by Goodenough 1971:19-20), it nevertheless seems to be a valid objection to mentalistic definitions of culture. Scientific concepts should have "empirical import," as Carl Hempel has observed (1952:39-44). This means that scientific concepts should refer to observables. If a concept does not refer to observables, generalizations containing the concept may be untestable. Now, social scientists can obviously observe only behavior; mental entities like ideas, values, and norms are intrinsically unobservable. Mentalistic concepts of culture therefore lack empirical import, and are suspect as scientific concepts.

This inability of the social scientist to observe mentalistic entities would appear to rule out mentalistic definitions of culture without further discussion. However, social scientists who believe they study mental entities can always make appeal to behavioral indexes of mental phenomena. If one can infer mental entities based upon observations of behavior, then the direct unobservability of mental entities could be argued to be unimportant. However, there are two reasons why such an effort to rescue mentalistic definitions of culture will founder. First, there is no reason to make the effort, for mentalistic concepts of culture are superfluous for any scientific purpose. Social scientists have no need to try to explain ideas, values, etc. in the mentalistic sense. When attempting to explain these mentalistic entities, the social scientist must not only infer their existence from behavior, he or she must construct them based upon an implicit theory which ties the observable behavior to the unobservable entities (incidentally, the implicit theory is inherently untestable). Ideas, values, etc. are therefore entirely superfluous constructs. If one explains the behavior (including speech) from which ideas are inferred, there is no need to try to explain unobservable entities inferred from behavior. Why should social scientists set out to explain non-empirical constructs <u>inferred</u> from empirical observation?

The second reason that the behavioral index attempt to salvage mentalistic definitions of culture will fail is that the inability of the social scientist to observe mental entities directly is only one side of the problem of unobservability. Mentalistic definitions of culture also do not take into account that <u>mental entities are unobservable to all humans</u>, including the members of the society being

studied. Members of human societies influence each other in manifold ways, but never through the direct observation of ideas, standards, values, etc. in the mentalistic sense. Humans come into direct contact with each other only through their behaviors. When "socialized," for example, the child never comes into contact with values, standards, etc.; he or she comes into contact with the behaviors of parents, teachers, peers, and others. In our educational institutions as well, the student comes into contact with behaviors and behavioral artifacts like books; not once has any student observed an "idea." Thus, it is not ideas or standards or values which interrelate the members of a society--which form them into a system--it is their behaviors. Mentalistic definitions of culture therefore do a poor job of carving at the joints of the reality that social scientists seek to explain.

Does the foregoing mean that social scientists should stop referring to ideas, values, and so on? Not at all. Social scientists, including this author and in this paper, will continue to refer to ideas, values, etc. as we use those terms in ordinary language. However, our concern in this paper is not ordinary language; our concern is fundamental scientific concepts. Scientific concepts, as we know from the history of science, must frequently depart from ordinary language concepts to achieve their purposes. However, even in a social science that no longer sought to explain mentalistic entities, social scientists could still usefully use terms like "ideas," "values," etc. These terms could be redefined within social science to refer to the observable activities through which we normally infer mentalistic entities. Thus, "ideas" could be used as a shorthand for the oral and written activities of

moralizing, philosophizing, theologizing, ideologizing, scientific theorizing, and so on (cf. Bagby 1953:538).

This criticism of mentalistic definitions of culture is therefore in no way a denigration of the work of those social scientists who study ideas, ideologies, attitudes, beliefs, and so on. Their work is as significant as any other social scientific work. The point of this critique is that at our most basic conceptual level all of these should be considered behaviors. It is the behavior of the units that is observed both by the social scientist and the members of a society. We must, in our most basic concepts, recognize this fundamental fact. However, if those who study in these areas find this argument unpalatable, social scientific theory would still profit if ideas, attitudes, and so on were at least reconceptualized as mental behavior. The phenomena would then still be considered mental, but behavioral phenomena nonetheless--activities of the organism. Even this view is sharply distinct from the view that ideas, attitudes, etc. are discrete mental entities or things which can be transferred, inherited, or shared like tangible objects.

A fourth and final theme in many definitions of culture is that culture includes material objects that have been transformed by human behavior--so called " material culture." Thus, included in culture under these definitions are tools, shelters, clothing, ornaments, monuments, books, works of art, and the like. Such definitions are widely employed in both sociology and anthropology. Among sociologists, Ely Chinoy (1970:86) has argued for a definition of culture which would include material objects. Leslie White (1959:238-239) and Gerald Weiss

(1973:1384) are among the many contemporary anthropologists who have proposed definitions of culture which would include such material things.

There are three major problems with such definitions. First, the criterion to be used for including material things in culture is vague. That vagueness leads to the same kinds of questions we have asked above for other criteria. How much does a material thing need to be transformed to be a part of culture? For example, under this criterion is a plowed field a part of culture? If so, is soil erosion in that field then cultural change? One could multiply such questions endlessly. If a rain cloud is seeded, is the resulting rain part of culture, while rain from unseeded clouds is just rain? Is the river into which cultural rain runs part of culture? What of the ocean into which the river runs?

These same questions lead us to the second problem with such definitions--they are too broad. It is conceivable that under this criterion for including material objects in culture we would today have to include the following kinds of things in culture: ski slopes; airport runways; skyscrapers; domesticated plants and animals; man-made lakes; refined oil; genetically engineered organisms; human individuals transformed by plastic surgery, artificial limbs, or organ transplants; and perhaps even polluted rivers, oceans, and lakes. On this criterion, it would appear that there is very little for contemporary industrial societies that is not culture. Indeed, one might be justified in asking at what point the planet itself would be sufficiently transformed to be included in culture! When these diverse and extensive material things are included in culture, along with observable behaviors and

mentalistic entities, as they often are, we have an object of study which has become theoretically unwieldy, to put it mildly. A concept which includes so much includes too much.

Third, and just as importantly, social scientists have no intrinsic interest in material objects as material objects--this is the domain of other sciences. The social scientist is not really interested, for example, in houses as material entities; he or she is interested in house-designing behaviors, house-building behaviors, and house-using behaviors (cf. Bagby 1953:538). Whenever a material object is transformed by humans, there are human behaviors associated with that transformation. Since we can include these behaviors in the definition of culture without including the material objects themselves, there is no good reason for defining culture so as to include material objects. We may, however, usefully refer to the class of material objects transformed by human cultural behavior as "cultural artifacts."

Conclusion. We have reviewed all criteria typically employed by social scientists in defining perhaps the two most basic concepts of the social sciences, society and culture. Almost all definitions in current use employ one or more of these criteria. Since all of these criteria have been shown flawed, any definition of society or culture which includes any one of these criteria is also flawed. Unfortunately, many definitions of society and culture employ more than one of the flawed criteria. The confusion resulting from one flawed criterion is compounded by adding a second or even a third. Even worse, however, definitions of society and culture frequently contain each other as critical terms. For example, some definitions

of society employ two or more of the flawed criteria discussed above, and also include a "shared culture" as another criterion. The definition of culture employed by the same social scientist may contain two or more of the common flawed criteria for that concept. In addition, the definition of culture may include the concept of society. The result is a conceptual morass.

Given the foregoing analysis, we may conclude that the concepts of society and culture as they have typically been defined are fundamentally unsound as scientific concepts. It is little wonder that we in the social sciences have failed to develop elegant scientific theories--the very foundations of our disciplines have been poorly constructed. Without a strong foundation, the whole edifice of the social sciences is jerry-built. The old concepts must therefore be swept away and replaced with a set of firmer concepts. The remainder of this paper proposes a set of such replacements.

SOCIETY AND CULTURE: SYSTEMS DEFINITIONS

If the very foundations of social scientific thinking are muddled, how would one go about thinking one's way out of such a muddle? Based upon the characteristics of scientific concepts and theories, it seems we could identify four goals to use as guideposts in attempting to reformulate definitions. First, since it is clear that current concepts are a tangled conceptual mess, we should attempt initially to wipe the slate as clean as possible. We should try to go to the very root of things, thereby leaving behind as much as possible the old assumptions that have caused the problems.

Second, and relatedly, our goal should be simple definitions. Current definitions of society and culture are frequently complex, employing two or more defining characteristics or criteria. Other problems aside, this complexity itself is a problem. The goal of science is widely accepted to be "elegant" theory, i.e., theory which is both simple and explanatorily powerful. One cannot build elegant theory with inelegant concepts. Since a scientific theory is a deductive structure, clear and precise inference at all levels is critically important. Complex concepts at the apex of a scientific theory make clear and precise inference difficult, and thus weaken a theory from the outset.

Third, while basic concepts should be simple, they should nevertheless also be interrelated. If we are to establish a deductive framework, the relationships among our basic concepts should be quite clear. Currently, we not only have poorly defined individual concepts, the relationships of those concepts to each other are unclear. Thus, some social scientists say that society and culture are quite distinct; some say one is an aspect of the other; and some use these two terms almost interchangeably. This is scientifically intolerable.

Fourth, and finally, in attempting to formulate new and better definitions of society and culture, we should follow as closely as possible standard rules for formulating definitions. Thus, we should avoid the pitfalls discussed above. We should also avoid definitions which are circular, and we should not state definitions in the negative when they can be stated in the positive. Lastly, we should probably proceed <u>per genus et differentia</u>, i.e., we should identify the general

class (genus) of which our defined class (species) is a member, and we should specify the difference (defining characteristic) which sets our defined class apart from other classes in the genus (see Cohen and Nagel 1934:238, or almost any logic text). The differentia itself should be an essential attribute of the class we are trying to define. In a less nominalistic age we would attempt to specify the "essence" of the thing defined. Today, as scientists, we should seek to identify the scientifically essential attribute of a thing. In other words, to use our earlier terminology, the differentia should "carve at the joints." One advantage to proceeding per genus et differentia is that we are then assured that our definitions will be interrelated. Furthermore, in identifying a genus, we also tie our concept to a broader class of phenomena, and therefore link our science to other sciences.

Our starting point, then, will be to identify a genus. Since we are attempting to define the fundamental entities of social scientific study, the genus should be a broader class of entities. Perhaps the most generic concept for an entity in science is system. The concept of system is, indeed, a core concept in all empirical sciences, from astronomy to chemistry. Moreover, social scientists already commonly predicate "systemness" of society, culture, and other objects of social scientific study. Of course, systems theorists have for a number of years touted systems theory as a unifier or integrator of the social sciences. Unfortunately, the great promise has gone largely unfulfilled. It is likely that one of the reasons that systems theory has not lived up to its billing is that systems theorists and social scientists have typically merely grafted systems theory onto conventional social

science concepts. Since those concepts are fundamentally unsound, the marriage of those concepts to systems theory has not been as productive as hoped. Our procedure, by contrast, will be to begin with the concept of system and derive the other concepts from that foundation.

System. If the concept of a system is to be our key, we must of course begin with a definition of system. Regretfully, even this is not an easy step. For one thing, the term "system" has become so popular that its use is now almost indiscriminate. Consider, for example, that Madison Avenue has elevated the plastic bag to the status of "food storage system." Social scientists themselves have also succumbed to the temptation to call just about everything they study a "system." It is as if dignity or importance were conferred on something by calling it a "system." This indiscriminate use of the term "system" has frequently reduced the value of the concept (Kuhn 1974:20).

Another factor to be considered in defining system is that systems theorists themselves have utilized a variety of definitions of system. This is not surprising, because systems theorists have often had in mind different kinds of things when defining system. For that reason, some systems theorists have proposed typologies distinguishing different types of systems. Thus, James G. Miller has distinguished concrete systems, conceptual systems, and abstracted systems (1978:16-22). Other systems theorists have proposed other typologies (e.g., Kuhn 1974: 21-40).

It is important for us to recognize, then, that all definitions of system will not be equally useful for a particular area of study. Definitions of system useful for the purposes of the art critic, the

mathematician, or historian of ideas may not be useful to the social scientist. We must therefore be discriminating in formulating a definition of system which will suit our purposes. We need a definition of system appropriate for empirical sciences studying entities composed of human beings. Using Miller's typology, that means we need a definition of system appropriate for "concrete systems."[2] A good definition of system for this type of system would be equally appropriate for atoms, molecules, cells, organisms, entities composed of organisms, solar systems, etc. Using this type of system as our genus is not only appropriate, it has the additional virtue of linking the social sciences with all other empirical sciences.

We can begin working toward such a definition by noting the elements which seem to be common to all definitions of system. First, definitions of system always refer to a set of things or elements of some sort. Second, they also refer to interactions or relationships among these things or elements (e.g., see Berrien 1968:14-15; Bertalanffy 1968:55-56; Buckley 1967:41; Bunge 1979:21; Hall and Fagen 1968:81; Kuhn 1974:21; Marchal 1975:460; Miller 1978:16; Rapoport 1967:114-115; Rapoport 1968:453; Rodin, Michaelson, and Britan 1978:748). The things or elements for our definition are material entities (subatomic particles, molecules, cells, etc.). We can therefore refer to them generically as units, emphasizing their wholeness and discreteness at a particular level of analysis. The interactions or relationships among these units involve the behavior of the units. The behavior of each unit is influenced by the behavior of the other units. In other words, the behaviors of the constituent units

of the entity are mutually dependent. It is, indeed, the mutual dependence of the behaviors of the units that results in the units constituting an entity. Thus, we may define system as a set of units whose mutually dependent behaviors form them into a new unit. This definition seems applicable to concrete entities from atoms to solar systems. It should be especially useful for conceptualizing the "entitiness" of entities which are not presented as such directly to human senses. Thus, this definition of system should be especially useful for conceptualizing an entity like a human society (for a discussion of the problem of the entitiness of "aggregates of persons," see Campbell 1958; Gerard, 1964, discusses the general problem of "entitation").

In utilizing this definition of system, it is important that we keep in mind a fundamental analytical point--systems are composed of two distinct sets.[3] First, a system is composed of a set of units. These units may be atoms, cells, organisms, or "heavenly bodies." Second, a system is also composed of a set of mutually dependent behaviors of the units. The second set transforms the first set into a new unit, or entity. We need to keep this analytical distinction in mind as we seek to formulate our other definitions.

In addition to "system," we should also have a definition of "subsystem." Considering both our definition of system and the meaning of the prefix "sub," we may define subsystem as a system whose units are a subset of the set of units of a more comprehensive system. This definition of subsystem differs considerably from many uses of the term. Many systems theorists and social scientists use the term to refer to a process in a system, or even to one functionally distinguishable

aspect of a system. Thus, many social scientists speak of political subsystems, economic subsystems, religious subsystems, etc. The problem with such uses of the term "subsystem" is that they do not follow the definition of a concrete system. Logically, a subsystem of a concrete system should itself be a concrete system. However, under many common uses of the term in the social sciences, a subsystem of a concrete system is not necessarily a concrete system itself. This logical flaw suggests that two different concepts of system are sometimes used concurrently. In order to avoid such conceptual confusion, the definition of subsystem proposed here follows strictly from the definition of system; it can therefore be used only to refer to concrete systems. A subsystem of a concrete system is itself a concrete system.

Another point regarding subsystems should be made. It follows from the distinction made above between a system's set of units and its set of mutually dependent behaviors that not only is a subsystem composed of a subset of the more comprehensive system's units, it is also necessarily composed of a subset of the mutually dependent behaviors of the more comprehensive system. In other words, a subsystem's units are a subset of the larger system's units; in addition, the mutually dependent behaviors of the subsystem's units which form them into a subsystem are a subset of the larger system's set of mutually dependent behaviors.

In using these definitions, it is essential that units be distinguished from both systems and subsystems. These three concepts are relative both to each other, and to a particular level of analysis. Thus, while a unit may be a system in its own right, at the level of

analysis at which it is a unit it is not a system. For example, at the level of the organism, a cell is a unit and not a system. A unit may therefore be thought of as the elementary particle for a particular level of system analysis.

Units and subsystems should also not be confused. A subsystem is composed of units of the same type as the larger system of which it is a part. Thus, cells are the units for both organs and organisms. Moreover, the units of any particular subsystem will also be units of the larger system of which the subsystem is a part. Nevertheless, at a given level of analysis, a unit is not a subsystem and a subsystem is not a unit. A cell is a unit in an organism, but it is not a subsystem; an organ is a subsystem in the same organism, but it is not a unit. It is important not to confuse these logically distinct concepts.

Society. We have now established a definition of system, the concept which will serve as the foundation of our attempt to define society. This broad concept of system can serve as the genus for a definition of the class of systems most often studied by social scientists, systems composed of humans. Keeping in mind our goal of simplicity, we can call this type of system a human system, and define it simply as a system whose units are human beings. There is a single defining characteristic for this class: the units of the system are human organisms rather than molecules, cells, or heavenly bodies. Following an unproblematic current usage, we can refer to the units in a human system as members, and call the system's collective set of units its membership. Under this definition, there are a great many

human systems, varying greatly in size. Some have only two members, e.g., wife and husband. A family of husband, wife, and children has a few more members. Clubs, businesses, government agencies, and universities have even more members. Several contemporary societies have members numbering in the hundreds of millions. Human system is the class name for all of these systems, from families to entire societies.

With a concept of system as our genus, we have established human systems as the class typically of interest to social scientists. We may now employ human system as a genus in our attempt to define society, because the entities we typically call societies are obviously human systems. We observed above in our discussion of current definitions of society that definitions of this term typically point, implicitly or explicitly, toward a characteristic of inclusiveness or comprehensiveness. Societies are more inclusive or comprehensive than the other human systems that social scientists study. In light of our previous definitions, this characteristic by itself is an adequate defining characteristic for society. Thus, we may define society (human society) as the most comprehensive human system of which a human individual is a member. In other words, a society is a human system which is not itself a subsystem of a more comprehensive human system. As a human system, a society includes, in addition to its membeship, all of the mutually dependent behaviors of all of the society's members. Thus, comprehensiveness does not refer to the size of a system's membership; this term refers to the relative inclusiveness of the behaviors of the membership. A society, as the most comprehensive human system for its members, includes all behaviors of all members which are at least a partial

function of membership in any human system. Put another way, a society subsumes all system-dependent behaviors of each of its members. This contrasts sharply with human systems that are not societies, for these systems subsume only some portion of their members' total system-dependent behaviors. This characteristic, comprehensiveness, is what distinguishes societies from other human systems.

Using this defining characteristic of comprehensiveness, it is easy to define human subsystems. A human subsystem is a human system whose members are a subset of a more comprehensive human system's membership. The subsystems of society include such systems as families, clubs, associations, corporations, governments, etc. The set of mutually dependent behaviors of these subsystems are a subset of the society's set of mutually dependent behaviors. Moreover, in reference to the individual members of a subsystem, the subsystem's set of mutually dependent behaviors is composed of subsets of each of the members' total set of behaviors which are dependent upon membership in the society.

Two additional definitions need to be offered to reduce the liklihood of confusion about these definitions. Political scientists frequently refer to a system they call the "international system." Is this not a more comprehensive system than society? It might seem so, until one considers whether the international system is a human system. It is not. The units of the international system are not individual human beings; they are societies. Thus, we may identify another type of system of interest to social scientists. Societal systems are systems whose units are societies. Societal systems are not human

systems, and therefore they cannot be more comprehensive than other human systems.

Another possible source of confusion would be systems composed of members from more than one society. International clubs and associations, and multinational corporations would fall in this category. In contrast to societal systems, these systems are human systems. We may designate such a system as intersocietal human system, and define it as a human system whose membership includes individuals from more than one society. The members of intersocietal systems are still members of their own societies, and the behaviors of each of the system's members which form them into an intersocietal system are nevertheless still part of their own respective societies. The behavioral interactions which form the members into an intersocietal system are merely one point of contact between societies.

There are a number of points that should be made about these definitions. First, recall that our definition of system is applicable to concrete systems. Human systems, including society, are thus concrete systems. This is one good reason for using the term "human system" rather than the popular term "social system": it stresses the concreteness of this type of system. For Talcott Parsons and many other contemporary social scientific theorists, the terms "social system" and "society" refer to abstracted systems rather than concrete systems (e.g., see Parsons 1968:469; the discussion of the Parsons position by Miller 1978:19-20, 747; and the response of Parsons 1980). Thus, the concept of society employed here is based upon what Parsons calls the "common-sense notion of society being composed of concrete human

individuals," a notion from which he dissents (1966:9). In sharp contrast to the Parsonian view, then, both societies and human systems in general are viewed here as concrete entities in the empirical world. Composed of concrete entities, the system resulting from the behavioral interations of these entities are also concrete entities.

The second point returns us to the discussion about interactions between the members of different societies. The several concepts proposed here should help us better conceptualize the interaction of societies. Societies always interact (at least directly) through the mutually influenced behavior of their members. However, the behavior of each member, though influenced by the behavior of the other society's member, is nevertheless still part of each member's own society. The affected behaviors may then produce rippling effects throughout both of the interacting individuals' own societies. Such rippling effects will be especially pronounced when the interacting individuals are strategically located in their own societies, as in the instance of two diplomats negotiating the terms of a peace treaty.

This leads us to a third point: if societies are not territorial units, what are the boundaries of societies? Since all system-dependent behaviors of a society's membership are part of the society, the boundaries of a society are determined simply by specifying the membership of the society. In general, membership in a society would be determined by the identification of an individual's behavior as part of a network of mutually dependent behaviors. As a member of American society, my behavior cannot vary independently of the other members of the society. This remains true even for those with whom

I never come in direct contact, for my behavior is nevertheless indirectly influenced by theirs through a vast and complex chain of behavioral interactions. On the other hand, my behavior presumably does vary independently (for the most part) of the behaviors of the members of a Pygmy society. Among contemporary industrial societies, of course, the situation will be less clear because of the large volume of behavioral interactions among their memberships. Nevertheless, membership no doubt can be unambiguously assigned in most cases through the use of various operational criteria.[4]

This is not to deny that there would be numerous fuzzy cases in bounding a society by specifying its membership. The existence of fuzzy cases, however, does not constitute a fatal objection to a particular conceptualization of an entity, or the criteria for bounding such an entity. Such fuzzy cases are a common problem in science, for entities sometimes "intergrade" (Campbell 1958). Biological populations, for example, are not always easily bounded, and yet the concept of a population and the criteria for bounding it are essential components in evolutionary theory.[5]

We have now formulated a definition of society, as well as necessary related concepts. Our goals in formulating the definition seem to have been met. First, we have wiped the definitional slate fairly clean. We retained the underlying notion of inclusiveness or comprehensiveness, but we abandoned all other common criteria used in defining society. The definition is also simple: a single criterion distinguishes societies from other human systems. This single criterion also seems sufficient for identifying those entities we normally call

societies. By Ockham's razor, we need no others. If this is correct, our definition is neither too broad nor too narrow. Neither does it seem ambiguous or vague; certainly, it is less vague than current definitions. We also seem to have followed other rules for formulating definitions: our definition is not circular; it is not stated in the negative; and it proceeds per genus et differentia. Finally, because our definition of society did proceed per genus et differentia, our concept of society is clearly related to other basic concepts. It should also be clearly related to the concept of culture. As we will see, this can be easily accomplished given our definition of system

Culture. In the opening paragraph of the discussion of current definitions of culture, we noted that despite a wide variety of definitions, there seemed to be a common thread running through all definitions of culture. That common thread is that the term "culture" refers in social science to human phenomena not capable of explanation solely in terms of human biology. What phenomena would these be, however? We have rejected mentalistic entities like ideas and values that are inferred from behavior. We have also rejected material objects transformed by human behavior. What remains, of course, is human behavior. Human behavior is thus the genus we will use in defining culture.

We have already referred to behavior in our definition of system. A system is a set of units whose mutually dependent behaviors form them into a new unit. A human system, like any system, is composed of two sets: 1) a set of units, in this case human beings; and 2) a set of mutually dependent behaviors, in this case a set of mutually dependent

behaviors of humans. At this point our sought-for definition of culture should be obvious. We can define culture very simply as the set of mutually dependent behaviors of the membership in a human system. The two distinct sets which make up a human system are therefore the membership and the culture. Neither set, by itself, is a system, or at least not a concrete system. Thus, even though culture is often said to be a system (e.g., White 1975), under these definitions a culture is not a system. Rather, a culture is the "systemness" of a human system, the behaviors of the units which form them into a concrete entity of the empirical world.

Before discussing this definition further, two other definitions may be helpful. Following our definitions of subsystem and culture, we may define subculture as the culture of a human subsystem. A subculture is thus composed of the behaviors of the members of a subsystem in virtue of which they form that subsystem. "Subculture" under this definition therefore differs considerably from one of the common uses of this term in social science, viz., for identifying a distinctive portion of a larger culture, but not necessarily one associated with a concrete subsystem.

We also need to make a sharp distinction between the concept of system as here defined and certain subsets of culture that are frequently identified as systems. Thus, in discussing a society, social scientists often refer to the technological system, economic system, political system, social system, etc. Under our definition of system, these are not systems, but rather analytical subsets of culture i.e., subsets of culture which aggregate behaviors by some non-system criterion.

These analytical subsets of culture are often treated as "abstracted systems" or "analytic systems" (Easton 1965:37-45). Thus, what Talcott Parsons calls "society" and subsystems of society are all analytical subsets of culture. Likewise, what David Easton calls a "political system" is an analytical subset of culture and not a system. Under these definitions, then, analytical subsets of culture like the "economy" and "politics" are not systems, subsystems, or subcultures.

This is not to say that there are not relationships among the parts of one of these analytical subsets of culture. Nor is it to say that concepts like technology, economy, and politics should not be used. It is only to say that we should not confuse concrete systems carved by nature with analytic sets carved by the scientist. Under our definition of system, the U.S. government is a system; Congress is a system; and the Federal Trade Commission is a system. On the other hand, "American politics" is not a system. If this term refers to the set of political behaviors of all members of American society, it may be an important concept and an important object of study. However, if we call it a "system," along with concrete things like molecules, cells, organisms, and the U.S. government, we are using "system" ambiguously, i.e., to refer to two quite different kinds of phenomena. The result of such ambiguous usage is a conceptual muddle.

To return to our main concern, the proposed definition of culture is consistent with the traditional view that culture consists of human phenomena not capable of explanation solely in terms of human biology. However, the definition avoids commonly used terms like "extrasomatic" and

"nongenetic" for two reasons. First, the phrase "mutually dependent behaviors" is used in order to relate the definition of culture to other definitions. This also makes clear the similarity between human systems and the larger general class of concrete systems whose units are united by their behaviors. Second, the phrase "mutually dependent behaviors" emphasizes that the behaviors included in culture are system-dependent, without implying that these behaviors have no genetic base or are somehow wholly independent of human biology.

In a sense, the proposed definition goes back to E. B. Tylor's classic definition, for Tylor's enumerative definition of culture included the critical phrase "acquired by man as a member of society" (1871:1). The definition proposed here says essentially the same thing, but in systems terminology (and also extends the concept of culture to all human systems). Thus, the cultural behavior of an individual is that portion of his or her behavior which is at least partly dependent upon membership in a human society. This is not to say that cultural behavior is independent of biology, for all human behavior is a function of an interaction of genotype and environment (among the useful discussions of this now widely accepted position are Freeman, 1970 and Barash, 1978:23-24). Nevertheless, not all human behavior is cultural behavior. Classifications of human behavior within psychology are still in a state of flux, and it would therefore not be wise to phrase the definition itself in terms of any particular scheme of classification. However, we can at least divide human behavior into the cultural and the non-cultural, and demarcate these two categories in light of current knowledge.

Non-cultural human behavior includes, first, genetically-fixed responses to environmental stimuli that are unaltered by the individual's prior experience. Unconditioned reflexes would fall in this category. Knee-jerks and eye-blinks are appropriate examples as long as these responses are unconditioned by the individual's experience. However, knee-jerks, eye-blinks, and other reflexes may be conditioned, which means that the behavioral response to a particular stimulus may be altered by the individual's prior experience. For example, the Hindu yogi is capable of altering or inhibiting a number of visceral and reflexive responses because of his conditioning. Thus, the unconditioned reflex is non-cultural; the reflex conditioned by system membership is cultural (as in the case of the yogi).

A second type of non-cultural behavior is system-independent conditioned behavior, i.e., "learned" behavior which is independent of membership in a human system. For example, learning to avoid touching red-glowing objects, as a result of having been burned in the past, could presumably take place independently of an individual's membership in a human society. In other words, learned behavior and cultural behavior are not synonomous. Learned behavior, of which cultural behavior is one species, is behavior which is not genetically fixed, i.e., response depends upon prior conditioning. Some learned behavior may be system-independent, and thus non-cultural. Imagine, for example, a genuine feral child. Such a child would no doubt have a substantial repertoire of learned behaviors. Under the definition of culture proposed here, none of these learned behaviors would be cultural behaviors, because none would be even a partial function of membership in a human system.

In distinguishing the non-cultural sphere, we have already distinguished the cultural: cultural behaviors are those behaviors which are at least a partial function of membership in a human society. In other words, cultural behaviors are those behaviors of human individuals that are conditioned by their experience as members of human systems. This includes not only interactive behaviors with other system members, but any behaviors conditioned by system membership. Such behaviors may and do occur when member individuals are alone and even isolated. All such system-dependent behaviors are cultural, whether they would be classified as technological, economic, political, social, religious, ideational, or whatever. The set of all such behaviors, for all members of a society, is the culture of that society. The subsets of this set of behaviors which form subsets of the society's members into subsystems, are the cultures of those subsystems (subcultures relative to the whole society's culture).

Under this definition of culture, do animals other than humans "have" culture? Social scientists, especially anthropologists, have often waxed eloquent in singing the praises of homo sapiens as the only culture-possessing or culture-bearing animal.[6] Leslie White, for example, consistently maintained this position (1969). Holloway says that culture is "a human domain"--"something unique to man" (1969: 395). Others, however, have questioned the limitation of culture to humans (e.g., Harris 1964:173-195; Harris 1979:122-123). One's position on this issue is profoundly influenced by one's definiton of culture. Because of differences in definitions, many who have argued over this issue have probably talked past one another. For

the definition proposed here, the issue of whether animals other than humans can be said to "have" culture is irrelevant, for culture has been defined with reference to human systems. To the extent that other animal systems, like those of the social insects, contain a set of behaviors which are not genetically fixed, and which are a partial function of system membership, those who study such animals might find useful the concept of culture proposed here. That, however, is their concern, and not the concern of social scientists.

Defining culture as a species of human behavior runs counter to long-standing objections within anthropology to including behavior itself in culture.[7] Marvin Harris, who notes this has been an "historically touchy point," at one time excluded behavior from the designation "cultural," even though the entire focus of his fascinating The Nature of Cultural Things was human behavior (1964:22). He managed this by defining culture as the set of "scientific concepts" used for the study of human behavior (Harris 1964:168-169). Thus, while the object of study is human behavior, the content of culture under this definition is not human behavior itself, but the operational concepts used for studying it. If this is the correct interpretation of his argument, Harris confused the concept of culture with culture itself--that is, the empirical referrent of the concept of culture. Acutely sensitive to a number of legitimate methodological and epistemological problems, Harris reached the untenable conclusion that when we study culture we study our concept of culture. It should be noted, parenthetically, that Harris has more recently defined culture as "the learned repertory of thoughts and actions exhibited by the members of social groups . . . " (1979:47).

In their classic review of concepts of culture, Kroeber and Kluckhohn also object to including behavior itself in culture (1952: 155-156,181). They maintain that rather than behavior, culture includes "patterns of behavior." There are three problems with their reasoning on this issue. First, for a social scientist to describe a "pattern" in something is to measure that something (in the broad sense of measurement). Thus, to define culture as patterns of behavior is to confuse measurements of a thing with the thing itself. This is comparable to a biologist confusing his measurements of a gene pool with the gene pool itself. Second, the term "pattern" as a definitional criterion is as vague as "shared" or "socially inherited." What would be a pattern for one observer would not be a pattern for another. If we are to study "patterns" when we study culture, we will be studying the perceptions of observers on what constitute patterns. Third, one of the reasons that Kroeber and Kluckhohn give for excluding behavior from culture is their view that human behavior is the subject matter of psychology (1952:155). They reason, therefore, that behavior must be excluded from the domain of culture if anthropology is to reserve this concept for itself. This jealous, disciplinary boundary maintenance has also been a common theme in White's work (even though White disagreed with Kroeber and Kluckhohn on this issue of behavior--see 1959:228-229). It is difficult to imagine, however, a more inappropriate guide for formulating the definition of a scientific concept. Rather than concepts which isolate and divide the sciences of human behavior, we need concepts which link and integrate them.

This don't-tread-on-my-discipline attitude, which is certainly not limited to any one discipline, is a serious obstacle to the generation

of a general theoretical framework for the social sciences. Given the definition of culture proposed here, which has been formulated without regard for disciplinary boundaries, one could even suggest (if one were so inclined) that a more appropriate name for the social sciences would be the "cultural sciences." This class of disciplines would include all sciences concerned with human behavior which is system-conditioned.

In formulating this definition of culture, we again seem to have met our goals. The definition is simple, and yet it is clearly related to the concepts of system and society. The definition also seems consistent with all of the rules we identified for formulating definitions. In addition, we wiped the slate fairly clean by abandoning the typical criteria used in defining culture. Nevertheless, the proposed definition is not wholly inconsistent with current definitions. Thus, culture is not restricted under the proposed definition to shared behaviors; on the other hand, shared behaviors are also not excluded from culture. Under this definition, the extent to which behaviors are "shared" among members of a system is a characteristic of a culture, and thus a matter for empirical investigation. Culture is also not restricted to socially inherited behaviors, and yet those behaviors of the members of a society that are similar to the behaviors of previous generations are still part of culture. The extent to which the culture of a society is similar to, or differs from, the culture of that society at some previous time is simply the rate of its cultural evolution. Likewise, while culture is defined so as to exclude ideas, standards, and so on, in the sense of unobservable mental entities, it is also defined so as to include ideas, standards, and so on in another sense--as a certain class of behaviors.

In addition, culture as defined here excludes material objects, and yet it includes all cultural behaviors associated with the category traditionally called "material culture."

A few additional virtues of this definition of culture may also be identified. First, under the proposed definition the abominable term "soc ocultural" would be relegated to the terminological dustbin. Most uses of this term seem a result of authors being unsure of themselves because of ambiguous and vague concepts. Of course, a combination of two poor concepts is hardly an improvement. Second, this definition of culture makes no specific assumptions about the biological foundations of the capacity for cultural behavior. Consequently, no position on current controversies regarding sociobiology is built into the definition. The definition should therefore not be rendered obsolete by future research; nor does the definition operate so as to dictate answers on questions open to research. Finally, this definition of culture, while simpler than the classic definition of Tylor, nevertheless still incorporates the essence of Tylor's definition, for the behaviors included in culture are those which are at least a partial function of an individual being "a member of society."

Glossary. The textual presentation of this series of related definitions may have made comparison difficult. A glossary should facilitate comparison and therefore help reveal the logical relationships among the proposed definitions.

I. System. A set of units whose mutually dependent behaviors form them into a new unit.

Subsystem. A system whose units are a subset of the set of units of a more comprehensive system.

Analytically, a system is composed of two sets: 1) the set of units themselves, and 2) the set of mutually dependent behaviors of those units.

II. Human System. A system whose units are human beings.

Membership. The set of units in a human system.

Society. The most comprehensive human system of which a human individual is a member.

Human Subsystem. A human system whose members are a subset of a more comprehensive human system's membership.

Societal System. A system whose units are societies.

Intersocietal Human System. A human system whose membership includes individuals from more than one society.

III. Culture. The set of mutually dependent behaviors of the membership in a human system.

Subculture. The culture of a human subsystem.

Analytical Subset of Culture. A subset of a culture which aggregates behaviors by some non-system criterion.

TOWARD AN ALTERNATIVE SOCIAL SCIENCE PARADIGM

We have now formulated definitions of both society and culture, as well as several related concepts. The definitions are quite simple. This alone is an advantage over current definitions. In addition, the proposed definitions are also more precise than current vague definitions. This would be sufficient by itself to justify adoption of the new definitions. These definitions are also unambiguously interrelated, because both definitions have been derived from a base definition of system. The two new concepts should therefore not become as easily entangled when

they are used. Relatedly, the foundation (concept of system) and process for reaching these definitions should allow us to expand the set of definitions. Thus, we should easily be able to define additional concepts which complement these base concepts. In other words, these concepts should be conceptually fruitful.

These virtues of the proposed definitions support a case for their adoption in the social sciences. However, as we observed at the beginning of this paper, the value of scientific concepts can be confirmed only through their use in a successful scientific theory. A new set of concepts can therefore be evaluated with any assurance only in the long run, as perhaps a few scientists who see merit in the new concepts begin using them with evident success. This is the final, and the only conclusive test of the value of a scientific concept. Neither the advocate nor the critic of new concepts can say anything definitive about them when they are first proposed. The advocate cannot "prove" the utility of new concepts, and the critic cannot prove that they lack utility.

Even if a definitive evaluation of the concepts we have formulated can only come with time, we may nevertheless be able to speed that process along by suggesting theoretical problems which the new concepts may help resolve. If these concepts do indeed carve at the joints, they should help resolve a number of old social science problems. Two of those old problems are closely intertwined: the mechanism and process of cultural evolution, and the relationship between micro and macro levels of analysis.

It is widely recognized, at least implicitly, that the foundation of cultural evolution is the behavioral adaptability of individual

human beings. The behaviors of human individuals are thus the units of selection in cultural evolution, as a number of authors have recently argued (e.g., Ruyle 1973:212-214; Durham 1976:96; Love 1977: 33; Richerson 1977:14-15; Barkow 1978:13; Harris 1979:60-61). Conceptualizing culture as the mutually dependent behaviors (the systemness) of a concrete system of human beings allows us to view cultural evolution as a set of mutually dependent behavioral adaptations of system members to their individual environments. This view should facilitate the development of a "behavioral theory" of cultural evolution (Langton 1979), a theory which would provide links between macro social science and learning theory in psychology. The development of such an integrating theory would go a long way toward resolving the micro-macro problem in the social sciences, i.e., the problem of the relations between the behavior of individuals and the behavior of the whole systems of which they are members.[8]

A brief, but more detailed explanation of this perspective may be helpful. Recall that a society or other human system is composed of two sets, the membership and the culture. In empirical research, these two sets become sets of variables. If culture is the set of variables of interest to the social scientist, the set of membership characteristics becomes one set of independent variables used for explanation. Included here would be size of population, genetic heritage, age distribution, sex distribution, etc. One other set of variables is also relevant. Systems have environments, a concept we have not been able to explore here. The environment then constitutes another set of variables for explaining culture. These three sets of variables exhaust the content of the social scientist's empirical world.

But what is an "environment?" Although we cannot discuss the definition here, we may define environment as that which is external to a system and relevant to the system's operation. This might be a useful definition of environment, but how can we concretely conceptualize the environment of a complex entity like a society? Given our definitions, the task is actually rather simple. First, we must apply the concept of environment to the individual member of society. For our purposes, the environment of the individual is that which is external to the individual and relevant to the individual's behavior. Now, the environment of a society has two components, a physical environment and an inter-societal environment. The individual also has these two components in his/her environment, i.e., the physical non-human world, and other societies (or strictly speaking, the behaviors of other societies' members). The environment of a society, then, is composed of (is the set of) all these two-component environments for all of the society's members. It is only through its individual members that a society has an environment.[9] A society has no senses except those of its members.

But there is an additional consideration, for in contrast to society, the individual has a third component in his or her environment--the cultural environment, i.e., the cultural behaviors of all of the other members of the individual's society. It is because of this that the two-component non-cultural environment both acts upon the individual only relative to his cultural environment, and is able to act upon the entire system by affecting the behavior of a single member. In the first instance, action of both the inter-societal and

physical environments on the behavior of the individual are dependent for their effects upon the individual's other environment, his cultural environment. In the second instance, since the behavior of one individual is potentially an environment for all other members of the society, action of the individual's non-cultural environment on his/her behavior can produce behavioral changes throughout the entire system.

Within this perspective, cultural evolution can be seen as the composite product of the mutually dependent adaptations (coadaptations) of the members of a human system to their changing individual physical and inter-societal environments. This, in short, is the process of cultural evolution, i.e., the interrelated set of steps or operations through which cultural evolution occurs. The effect of viewing the process of cultural evolution in this way is a conceptual linkage of micro and macro levels. While the scientist concerned with macro variables will not want to trace all changes to discrete individuals, this could nevertheless, in principle, be accomplished with this perspective.

This perspective, however, allows us to go even further in providing linkages between levels of analysis. As stated above, the unit of selection in cultural evolution is the behavior of individual humans. Individual humans are material entities, physicochemical systems. The environments of individual humans are themselves composed of physicochemical elements. And finally, the means through which the environments of human individuals act upon them are physicochemical. Thus, the physicochemical level can be linked, through the means above and through intermediate levels, to the level of whole societies and their cultural evolution. That is not to say that social scientists should concern

themselves with physics and chemistry. Accepting links between levels of analysis is no threat to disciplines at levels above the ground level. Accepting those links is only to accept the unity of science and to eschew mystical conceptions of processes at higher levels.

If the concepts proposed here have all of the virtues discussed, as well as theoretical significance, they should prove to be highly successful alternatives to current concepts. Of course, the process of replacement would be unsettling. Those wedded to old concepts may frown upon new and seemingly radical definitions of familiar terms. If that is likely, one could consider coining new terms for these definitions rather than using old terms with established, even if vague and ambiguous, usages. One reason for not following this course is that there are important connections between the proposed definitions and current definitions. These definitions are not wholly new. More importantly, however, if the old concepts are as unsound as our analysis has suggested, it is important that the new definitions be pitted against the old in order that the new may supplant the old. The old definitions are theoretically pernicious.

As we noted in the early part of this paper, the social sciences have no general laws. Such laws, which are essential for a powerful deductive framework, are merely statements of relationships among concepts. If the social sciences' most basic concepts are fundamentally unsound, use of those concepts will make the formulation of successful general laws inherently impossible. Thus, the old, flawed concepts must be supplanted. If the concepts we have proposed are the appropriate replacements, we should be able to formulate general laws

for the social sciences through use of these concepts. Such general laws, together with the concepts, would constitute foundations for an alternative social science paradigm.

NOTES

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[1]The self-sufficiency criterion is not only common; it is also very old, going back at least to Aristotle. Aristotle distinguished the polis from other forms of human association because in the polis humans found, he thought, full self-sufficiency. Of course, Aristotle's concept of self-sufficiency goes beyond most such concepts, for his concept was connected with a teleological view of the development of the polis. The polis was fully self-sufficient, thought Aristotle, because only in the polis could man achieve "his"full potential as a moral, spiritual, and intellectual being (1962:8).

[2]Miller defines concrete system as a "nonrandom accumulation of matter-energy in a region in physical space-time, which is organized into interacting interrelated subsystems and components" (1978:17). Ervin Laszlo argues convincingly that "the more rigorous and technical definitions of system make it clear that only one variety of systems can be meaningful included in this definition, and that is the variety Miller terms concrete system" (1975:16).

[3]See Berrien 1968:14-15; Bertalanffy 1968:54-56; Buckley 1967: 41-45; Bunge 1979:21; Hall and Fagen 1968:81; Kuhn 1974:21-22; Marchal 1975:462-465; Miller 1978:16; Rapoport 1968:453.

[4]It is beyond the scope of this work to discuss particular examples of operational criteria for bounding societies. Campbell's paper (1958) would be one relevant starting point for this problem.

[5]While societies are bounded merely by specifying their membership, bounding other human systems is more difficult. The difficulty arises because human systems other than societies do not include all system-dependent behaviors of their members, but only those behaviors in virtue of which they form the particular system.

[6]Actually, to say that humans "have" or "acquire" culture is a rather odd way of speaking, even using some current definitions. Given the definition proposed here, it is probably inappropriate to speak of the "acquisition of culture." It is especially inappropriate inasmuch as the behaviors of no two individuals are identical. On the other hand, the individual is conditioned by his or her experience in society, and

in that sense, perhaps the individual "acquires" his cultural behaviors. In some ways, however, it might be just as appropriate, or more so, to say that the individual emits culture.

[7]A noteworthy exception is Bagby, but he limits culture to non-hereditary "regularities of behavior" (1953:539). Hoebel also defines culture in terms of behavior ("learned behavior traits"), but he says these traits must be shared and inherited (1956:168).

[8]For an attempt to deal with the issue of individualism versus holism employing a systems concept similar to that proposed here, see Bunge 1979.

[9]Mason and Langenheim have made this same point in regard to biological macro-units: "There are no phenomena operationally significant to such aggregates of organisms as species, stands, communities, associations, or floras except as summations or as logical products of phenomena operationally significant to the included or associated individuals" (1957:331).

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